REMARKS

The final Office Action restricts claims 12-14, 16, and 17 as directed to a distinct or independent invention that was not part of the claims originally presented; rejects claims 1-7, 10, 11, 15, and 18 under 35 U.S.C. § 103(a) as unpatentable over SHIMA et al. (U.S. Patent No. 6,456,714) in view of EDHOLM (U.S. Patent No. 6,449,269), and further in view of AKATSU et al. (U.S. Patent No. 6,496,862); and rejects claims 8, 9, 19, and 20 under 35 U.S.C. § 103(a) as unpatentable over SHIMA et al. in view of EDHOLM. Applicant respectfully traverses this rejection.

By the present amendment, Applicant proposes canceling claims 6-9 and 12-20 without prejudice or disclaimer and amending claims 1-3 and 5 to improve form. No new matter has been added by way of the present amendment. Claims 1-5, 10, and 11 will be pending upon entry of this Amendment.

Claims 12-14, 16, and 17 stand restricted as directed to a distinct or independent invention that aw not part of the claims originally presented. Applicant continues to traverse this restriction requirement. However, in an attempt to expedite prosecution, Applicant proposes canceling claims 12-14, 16, and 17 without prejudice or disclaimer.

For at least the foregoing reasons, Applicant requests that the restriction requirement be reconsidered and withdrawn.

Pending claims 1-5, 10, and 11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over SHIMA et al. in view of EDHOLM, and further in view of AKATSU et al. Applicant respectfully traverses this rejection.

At the outset, Applicant notes that in response to an After Final Amendment, filed May 18, 2005, that amended claims 1-3 and 5 in the same manner as in this Amendment, the Examiner indicated in the Advisory Action, dated June 28, 2005, that claims 1-5, 10, and 11 are patentable over the art of record. Therefore claims 1-5, 10 and 11, amended as proposed, are believed to be allowable. Nonetheless, Applicant presents the following arguments regarding patentability.

Independent claim 1 is directed to a network switching system that includes a gateway; one or more extension nodes, where each is identified with a unique physical identifier and is selectively identified with a unique telephone number; and a serial bus interconnecting the gateway and the one or more extension nodes. The stream data transferred on the serial bus are exchanged through the gateway between an outside line and an extension node, or between a first extension node and a second extension node. At least of the extension nodes includes a control/memory unit for storing physical identifiers and telephone numbers of the gateway and extension nodes and for controlling the network, thereby allowing the at least one extension node to transmit and receive stream data from outside telephone numbers and from telephone numbers of other extension nodes; an asynchronous interface, for selecting the extension node and controlling a switching timing, connected with the control/memory unit; a rate conversion unit for converting a data rate of the stream data in the network into that in the outside line, or for converting a data rate of stream data in the outside line into that of the network switching system; and an isochronous interface, for transmitting and receiving the stream data, connected with the rate conversion unit. SHIMA et al., EDHOLM, and

AKATSU et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, SHIMA et al., EDHOLM, and AKATSU et al. do not disclose or suggest at least of the extension nodes including a control/memory unit for storing physical identifiers and telephone numbers of the gateway and extension nodes and for controlling the network, thereby allowing the at least one extension node to transmit and receive stream data from outside telephone numbers and from telephone numbers of other extension nodes; an asynchronous interface, for selecting the extension node and controlling a switching timing, connected with the control/memory unit; a rate conversion unit for converting a data rate of the stream data in the network into that in the outside line, or for converting a data rate of stream data in the outside line into that of the network switching system; and an isochronous interface, for transmitting and receiving the stream data, connected with the rate conversion unit. The final Office Action appears to rely on SHIMA et al.'s element 230 for allegedly corresponding to the recited at least one extension node (final Office Action, pg. 5). Applicant disagrees.

Applicant notes that the final Office Action relies on SHIMA et al.'s element 230, which is disclosed to be a peripheral device, for allegedly corresponding to the recited at least one extension node and for also corresponding to the gateway recited in Applicant's claim 1 (final Office Action, pg. 5). It is unclear how the final Office Action can reasonably allege that the same peripheral device 230 can correspond to two different elements recited in Applicant's claim 1. Such an attempt to reconstruct Applicant's claim would render elements of Applicant's claim 1 nonsensical. For example, claim 1

specifically recites a serial bus interconnecting the gateway and the one or more extension nodes. If, as alleged in the final Office Action, the recited gateway and the one or more extension nodes were in fact the same element, there would be no need for a serial bus that interconnects peripheral device 230 to itself. Moreover, claim 1 specifically recites that stream data transferred on the serial bus are exchanged through the gateway between an outside line and an extension node or between a first extension node and a second extension node. Clearly, if the gateway and the one or more extension nodes were the same element, as alleged in the final Office Action, this feature of claim 1 would be rendered nonsensical. Applicant submits that the final Office Action's allegation that the gateway and the one or more extension nodes are the same element is clearly unreasonable. Withdrawal of this allegation is respectfully requested.

The final Office Action also points to SHIMA et al.'s elements 110-150 as allegedly corresponding to the recited one or more extension nodes (final Office Action, pg. 5). SHIMA et al.'s elements 110-150 correspond to a digital video camera, a digital video monitor, a computer, a digital video cassette recorder (VCR), and a printer, respectively. SHIMA et al. in no way discloses or suggests that any of these elements 110-150 includes a control/memory unit for storing physical identifiers and telephone numbers of the gateway node and extension nodes and for controlling the network, thereby allowing the at least one extension node to transmit and receive stream data from outside telephone numbers and from telephone numbers of other extension nodes; an asynchronous interface, for selecting the extension node and controlling a switching timing, connected with the control/memory unit; a rate conversion unit for converting a

data rate of the stream data in the network into that in the outside line, or for converting a data rate of stream data in the outside line into that of the network switching system; and an isochronous interface, for transmitting and receiving the stream data, connected with the rate conversion unit, as required by claim 1. If this rejection is maintained, Applicant requests that the Examiner specifically point out where in SHIMA et al. it is disclosed that digital video camera 110, digital video monitor 120, computer 130, digital VCR 140, or printer 150 includes the control/memory unit, asynchronous interface, rate conversion unit, and isochronous interface recited in Applicant's claim 1.

The disclosures of EDHOLM and AKATSU et al. do not remedy the above deficiencies in the disclosure of SHIMA et al.

For at least the foregoing reasons, Applicant submits that claim 1 is patentable over SHIMA et al., EDHOLM, and AKATSU et al., whether taken alone or in any reasonable combination.

Claims 2-4, 10, and 11 depend from claim 1. Therefore, these claims are patentable over SHIMA et al., EDHOLM, and AKATSU et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1. Moreover, these claims recite additional features not disclosed or suggested by SHIMA et al., EDHOLM, and AKATSU et al.

For example, claim 4 recites that the asynchronous interface and the isochronous interface are connected with a bus manager which controls the asynchronous interface, the isochronous interface, the control/memory unit, and the rate conversion unit. SHIMA et al., EDHOLM, and AKATSU et al., whether

taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

At the outset, Applicant notes that since SHIMA et al., EDHOLM, and AKATSU et al. do not disclose or suggest an extension node that includes an asynchronous interface, an isochronous interface, a control/memory unit, and a rate conversion unit, SHIMA et al., EDHOLM, and AKATSU et al. cannot disclose a bus manager that controls these features.

The final Office Action relies on col. 4, lines 30-42, col. 5, lines 1-20, and col. 6, line 37 to col. 7, line 35 of SHIMA et al. and col. 2, line 40 to col. 3, line 13, and col. 5, line 4 to col. 6, line 31 (especially col. 6, lines 16-31) of AKATSU et al. for allegedly disclosing the bus manager of claim 4 (final Office Action, pg. 8). Applicant submits that these sections of SHIMA et al. and AKATSU et al. do not disclose or suggest the above features of claim 4.

At col. 4, lines 30-42, SHIMA et al. discloses:

> Memory 330 provides temporary storage for the voice and data signals transferred between outside telecommunications network 210 and multimedia network 100. Specifically, memory 330 buffers the digital voice and data signals received by network interface card 310 from telecommunications network 210 before the signals are transmitted by bus interface 340 to telecommunications network 100. Likewise, memory 330 buffers the digital voice and data signals received by bus interface 340 from multimedia network 100 before the signals are transmitted by network interface card 310 to telecommunications network 210. Memory 330 preferably is a DRAM, but may constitute any other high-speed read/write memory.

The final Office Action appears to allege that SHIMA et al.'s memory 330 corresponds to the recited bus manager. This section of SHIMA et al. discloses a

memory 330 that temporarily stores voice and data signals. SHIMA et al. in no way discloses or suggests that memory 330 acts in any other capacity than is commonly known in the art - i.e., storing data. Therefore, SHIMA et al.'s memory 330 cannot correspond to the recited bus manager. This section of SHIMA et al. in no way discloses or suggests a bus manager that connects to an asynchronous interface and an isochronous interface and controls the asynchronous interface, the isochronous interface, a control/memory unit, and a rate conversion unit, as required by claim 4.

At col. 5, lines 1-20, SHIMA et al. discloses:

> FIG. 4 illustrates exemplary protocols consistent with the present invention for establishing and maintaining an incoming voice call connection between a device in telecommunications network 210 and a device in multimedia network 100. When a caller in telecommunications network 210 dials up the destination address (e.g., telephone number) assigned to multimedia network 100, peripheral device 230 receives a voice call request in accordance with, for example, xDSL standards (stage 405).
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> Peripheral device 230 allocates the amount of bandwidth needed to support the voice signal (e.g., 64 Kbps) to the voice connection (stage 410). Peripheral device 230 then broadcasts the voice signal by sending an incoming call indication (e.g., a ring signal) to the consumer electronics devices in multimedia network 100 (stage 415). Alternatively, peripheral device 230 sends an incoming call indication (e.g., a ring signal) to only those consumer electronics devices capable of receiving voice signals. In a preferred embodiment, peripheral device 230 uses asynchronous data transfer protocols during broadcast stage 415.

At the outset, Applicant notes that this section of SHIMA et al. does not mention memory 330, which the final Office Action appears to allege corresponds to the recited bus manager. Nonetheless, this section of SHIMA et al. in no way discloses or suggests a bus manager that connects to an asynchronous interface

and an isochronous interface and controls the asynchronous interface, the isochronous interface, a control/memory unit, and a rate conversion unit, as required by claim 4. Instead, this section of SHIMA et al. merely discloses that peripheral device 230 allocates bandwidth for an incoming voice call.

At col. 6, line 37 to col. 7, line 35, SHIMA et al. discloses a process for establishing and maintaining data communications between a multimedia network 100 and an originating device in a telecommunications network 210 and a process for allocating bandwidth for a voice call. Applicant notes once again that this section of SHIMA et al. does not mention memory 330, which the final Office Action appears to allege corresponds to the recited bus manager. Nonetheless, this section of SHIMA et al. in no way discloses or suggests a bus manager that connects to an asynchronous interface and an isochronous interface and controls the asynchronous interface, the isochronous interface, a control/memory unit, and a rate conversion unit, as required by claim 4.

At col. 2, line 40 to col. 3, line 3, AKATSU et al. discloses:

> With regard to the myriad interconnection wires in more complex home entertainment systems, one solution is the IEEE 1394-1995 standard and its extensions IEEE 1394a, and IEEE 1394b, which are referred to herein as "IEEE 1394". In one embodiment, a IEEE 1394 cable is a six strand cable: one strand for power, one strand for ground, two strands for data, and two strands for strobes used to synchronize the data strands. In an alternative embodiment, a four strand cable can be used, omitting the power and ground strands. IEEE 1394 cable also comprises a shield, which prevents electromagnetic interference. At its core, IEEE 1394 cable is essentially a high performance serial bus, having data rates as of this present writing of up to 400 megabits per second.
>
> Advantageously, the IEEE 1394 bus reduces the need for the myriad wires in a home entertainment system, as the component electronic devices may

> be designed to receive power and communication through the IEEE 1394 cable, thereby reducing the connections needed for most devices to as few as a single cable in a backplane bus environment. The IEEE 1394-1995 standard provides a specification for aspects of the physical, link and transaction layers for implementing of the IEEE 1394 bus, including provisions for such functions as resetting the bus, bus arbitration, node configuration, standard packet structures, initializing packet transmission, sending and receiving asynchronous packets, sending and receiving isochronous packets, transaction control, and error detection and correction.
>
> Communication over IEEE 1394 bus differs from many previous technologies in that it is purely digital. In particular, data carried on the IEEE 1394 bus is either digital from the source (e.g., a CD-ROM), or it must be converted by an analog-to-digital converter before being placed on the IEEE 1394 bus. Further, communication in a IEEE 1394-based system is peer-to-peer, i.e., each device (a.k.a. "node") on the IEEE 1394 bus can communicate with any other node without requiring communication/control requests to be processed through a central device/node (e.g., as is required in a "client-server" type configuration). In a IEEE 1394-based system, the controller can reside in any node, so in a sense, the IEEE 1394 bus itself becomes the controller

This section of AKATSU et al. discloses information regarding an IEEE 1394 bus. This section of AKATSU et al. in no way discloses or suggests a bus manager that connects to an asynchronous interface and an isochronous interface of an extension node and controls the asynchronous interface, the isochronous interface, a control/memory unit, and a rate conversion unit of the extension node, as required by claim 4.

At col. 5, line 4 to col. 6, line 31, AKATSU et al. discloses two IEEE 1394 backplane environments 216 bridged to an IEEE 1394 cable environment 212. This section of ATKATSU et al. discloses a serial bus management layer 416 that is part of a protocol stack 400. Serial bus management layer 416 provides bus management, isochronous resource management, and node control. This section

of AKATSU et al. does not disclose or suggest, however, that serial bus management layer 416 connects to an asynchronous interface and an isochronous interface of an extension node and controls the asynchronous interface, the isochronous interface, a control/memory unit, and a rate conversion unit of the extension node, as required by claim 4.

For at least these additional reasons, Applicant submits that claim 4 is patentable over SHIMA et al., EDHOLM, and AKATSU et al., whether taken alone or in any reasonable combination.

Independent claim 5 is directed to a gateway that includes a first switching unit for controlling extension nodes connected with a serial bus for isochronous transfer and a second switching unit for exchanging stream data between an outside line and the extension nodes. The first switching unit comprises a server bus manager connected with an asynchronous interface and an isochronous interface. The second switching unit comprises a line manager connected with a codec and a control/memory unit. The line manager exchanges the stream data between the outside line and at least one of the extension nodes, according to a request from the bus manager. The server bus manager manages a call-in to the extension node and a call-out from the extension node. Each of the at least one extension nodes is identified by a unique physical identifier and selectively identified by a unique telephone number. SHIMA et al., EDHOLM, and AKATSU et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, SHIMA et al., EDHOLM, and AKATSU et al. do not disclose or suggest a line manager that exchanges stream data between an outside line and at least one of the extension nodes according to a request from a bus manager. The final Office Action alleges that SHIMA et al.'s microcontroller 320 (Fig. 3) corresponds to the recited line manager (final Office Action, pg. 8). Applicant disagrees.

SHIMA et al. discloses that microcontroller 320 determines whether sufficient bandwidth exists to support a requested connection and maintains a real time accounting of the amount of bandwidth currently used on serial bus 160 and telephone line 220 (col. 4, lines 45-50). SHIMA et al. in no way discloses or suggests, however, that microcontroller 320 exchanges stream data between an outside line and at least one of the extension nodes according to a request from a bus manager, as required by claim 5. In fact, the final Office Action admits that SHIMA et al. does not disclose a bus manager (final Office Action, pg. 10). It is unclear how the final Office Action can reasonably allege that SHIMA et al. discloses that microcontroller 320 exchanges stream data between an outside line and at least one of the extension nodes according to a request from a bus manager, when the final Office Action admits that SHIMA et al. does not disclose a bus manager.

Nonetheless, SHIMA et al.'s microcontroller 320 does not exchange stream data between an outside line and at least one of the extension nodes according to a request from a bus manager, but merely determines whether

sufficient bandwidth exists to support a requested connection and maintains a real time accounting of the amount of bandwidth currently used on serial bus 160 and telephone line 220 (col. 4, lines 45-50).

SHIMA et al., EDHOLM, and AKATSU et al. do not further disclose a server bus manager that connects with an asynchronous interface and an isochronous interface and manages a call-in to an extension node and a call-out from an extension node. The final Office Action admits that SHIMA et al. and EDHOLM do not disclose these features and relies on col. 2, line 40 to col. 3, line 13, and col. 5, line 4 to col. 6, line 31 (especially col. 6, lines 16-31), of AKATSU et al. for allegedly disclosing these features of claim 5 (final Office Action, pg. 10). Applicant submits that these sections of AKATSU et al. do not disclose or suggest the above features of claim 5.

At col. 2, line 40 to col. 3, line 3, AKATSU et al. discloses:

> With regard to the myriad interconnection wires in more complex home entertainment systems, one solution is the IEEE 1394-1995 standard and its extensions IEEE 1394a, and IEEE 1394b, which are referred to herein as "IEEE 1394". In one embodiment, a IEEE 1394 cable is a six strand cable: one strand for power, one strand for ground, two strands for data, and two strands for strobes used to synchronize the data strands. In an alternative embodiment, a four strand cable can be used, omitting the power and ground strands. IEEE 1394 cable also comprises a shield, which prevents electromagnetic interference. At its core, IEEE 1394 cable is essentially a high performance serial bus, having data rates as of this present writing of up to 400 megabits per second.
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> Advantageously, the IEEE 1394 bus reduces the need for the myriad wires in a home entertainment system, as the component electronic devices may be designed to receive power and communication through the IEEE 1394 cable, thereby reducing the connections needed for most devices to as few as a single cable in a backplane bus environment. The IEEE 1394-1995 standard provides a specification for aspects of the physical, link and

> transaction layers for implementing of the IEEE 1394 bus, including provisions for such functions as resetting the bus, bus arbitration, node configuration, standard packet structures, initializing packet transmission, sending and receiving asynchronous packets, sending and receiving isochronous packets, transaction control, and error detection and correction.
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> Communication over IEEE 1394 bus differs from many previous technologies in that it is purely digital. In particular, data carried on the IEEE 1394 bus is either digital from the source (e.g., a CD-ROM), or it must be converted by an analog-to-digital converter before being placed on the IEEE 1394 bus. Further, communication in a IEEE 1394-based system is peer-to-peer, i.e., each device (a.k.a. "node") on the IEEE 1394 bus can communicate with any other node without requiring communication/control requests to be processed through a central device/node (e.g., as is required in a "client-server" type configuration). In a IEEE 1394-based system, the controller can reside in any node, so in a sense, the IEEE 1394 bus itself becomes the controller

This section of AKATSU et al. discloses information regarding an IEEE 1394 bus. This section of AKATSU et al. in no way discloses or suggests a server bus manager that connects with an asynchronous interface and an isochronous interface and manages a call-in to an extension node and a call-out from an extension node, as required by claim 5.

At col. 5, line 4 to col. 6, line 31, AKATSU et al. discloses two IEEE 1394 backplane environments 216 bridged to an IEEE 1394 cable environment 212. This section of ATKATSU et al. discloses a serial bus management layer 416 that is part of a protocol stack 400. Serial bus management layer 416 provides bus management, isochronous resource management, and node control. This section of AKATSU et al. does not disclose or suggest, however, that serial bus management layer 416 connects with an asynchronous interface and an

isochronous interface and manages a call-in to an extension node and a call-out from an extension node, as required by claim 5.

For at least the foregoing reasons, Applicant submits that claim 5 is patentable over SHIMA et al., EDHOLM, and AKATSU et al., whether taken alone or in any reasonable combination.

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of this application, and the timely allowance of the pending claims. Applicant respectfully requests that the present amendment be entered since the amendment places the present application in immediate condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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